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Malaysia

Biofuels Annual

2013

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Report Highlights:
Faced with sluggish domestic demand, and stiff competition from Indonesia in export markets, Malaysia's biodiesel sector continues to struggle. Nonetheless, the government has pledged to continue supporting the sector, and seeks to complete implementation of a 5 percent blend, followed by a 10 percent blend in 2014. The dominant objective of the program continues to be to boost demand for crude palm oil.

Post:
Kuala Lumpur

I. Executive Summary:

Record year-end level palm oil stocks of 2.62 million tons in December 2012 prompted the Government of Malaysia (GOM) to accelerate implementation of the five percent palm methyl ester blend (B5) diesel marketing program, with the goal of achieving nationwide coverage by the end of 2013. In 2012, GOM provided RM300 million to assist with establishing blending and storage facilities in Peninsular Malaysia. B5 is now available in some outlets in central Malaysia, and according to the original plan, B5 was to be made available in each State by mid-2014. However, with the new goal, B5 is to be launched in outlets in the Southern Region of Johor in July 2013, followed by the Northern States of Perak, Kedah, Perlis, and Penang by October 2013, and then in Kelantan and Terengganu by December 2013. With B5 then fully available throughout Peninsular Malaysia, GOM's goal is to extend it to East Malaysia by July 2014. Nonetheless, in those States where B5 is currently available, only a limited number of outlets carry it. For B5, currently the additional cost for blending biodiesel is about RM80 per ton or 0.80 cents per litre.

Once the B5 mandate is implemented nationwide in mid-2014, GOM reportedly will then focus on production and marketing of a 10 percent palm methyl ester blend (B10). GOM hopes that the higher incorporation rate of palm oil to produce biodiesel will act as another important source of demand and help to maintain lower palm oil stocks. To assist the B10 program, GOM will provide an annual subsidy of RM413.6 million to producers, at about RM3,000 per ton. It is still unclear whether GOM is prepared to increase the subsidy rate should palm oil prices increase. Furthermore, even with these incentives, interest in B10 biodiesel is still limited. Nonetheless, GOM expects that the eventual B10 production will significantly increase demand for the feedstock, crude palm oil, reaching over 500,000 tons annually.

Exchange Rate: US$1=RM3.10 (Jun 03, 2013)

II. Policy and Programs

The Government of Malaysia's (GOM) primary biofuels' policy objective is to increase demand for the local feed stock, crude palm oil (CPO), which will then ease domestic CPO stock pressure. Second, GOM hopes to use waste materials from the palm oil sector {palm fronds, empty fruit bunches, old trees, palm oil mill effluent (POME), etc} as feed stock for energy production. Third, GOM hopes to capture methane from POME to be used for energy production, and also to cut greenhouse gas emissions resulting from palm oil processing. All of the aforementioned goals fit with an overall national strategy for emphasizing research and development in alternative fuels, but none of the three have yet advanced as GOM had hoped. Methodologies for using of palm waste material for biofuels (mainly ethanol) are not fully developed, methane capture is not yet widespread, and implementation of a palm methyl ester biodiesel blend has been slow. Until the end of 2012, relatively high palm oil prices hindered advancement of the biodiesel sector.

Since early 2013, palm oil prices have been fluctuating from RM 2,200 to RM2,300 per ton. At these prices, and with petroleum $100 a barrel, biodiesel production has still been unprofitable. Malaysia's biodiesel sector needs government subsidies to remain viable. GOM allocated RM300 million to assist with constructing the necessary marketing infrastructure for B5. About RM80 million of that had been spent by the end of 2012 to construct blending and storage facilities. Production companies receive RM80 per ton to make B5.

The B5 mandate is to be fulfilled this year, with the product available throughout Malaysia by the end of 2013. GOM will then introduce B10, a blend of 10 percent palm methyl ester and 90 percent petroleum based diesel, in mid-2014. To ensure the viability of the B10 program, GOM will provide an annual subsidy RM413.6 million. The Ministry of Plantation Industry and Commodities is reportedly working with automobile manufacturers to develop fuel standards to ease acceptance of B10 biodiesel. In addition to the GOM support provided to develop marketing infrastructure, the Malaysia Palm Oil Board (MPOB) is backing a consortium to mobilize the private sector. The consortium, Biodiesel Malaysia, is led by two of Malaysia's leading palm oil companies. But it is still unclear what role this entity will play and how it will interact with GOM to implement the biodiesel mandates. Despite the government support, it is unlikely that the B10 mandate will be able to be implemented until mid-2015.

B5 and petroleum based diesel are priced the same, and consumers would not have any reason to switch to or search for B5. In fact, some consumers may actively avoid B5. As a result, retailers tend to refrain from advertising their diesel as B5 biodiesel.

In 2012, B5 was only available in limited regions of central Malaysia, and use was about 112,000 tons. If the program is implemented throughout Malaysia and used in the subsidized sector of personally-owned vehicles, consumption of CPO for biodiesel would be about 320,000 tons or 1.7 percent of total CPO produced. If the non-subsidized commercial sectors, such as manufacturing are also included, an estimated 500,000 tons of CPO would be needed.

GOM's priorities for protecting the environment are inextricably to its support for sustainable palm oil production. While not a GOM agency, the Round Table on Sustainable Palm Oil (RSPO) plays a key

role in environmental issues and consumer acceptance of products derived from palm oil. In April 2013, RSPO set new Principles and Criteria, which will require stricter production techniques and GHG monitoring and tabulating.

Consumption of B5 Biodiesel in Malaysia in 2012

	B5 (in tons)
Subsidized transport sector for whole Malaysia	320,000
Non subsidized commercial sector – Manufacturing & Logistic	180,000
Potential consumption throughout Malaysia	500,000
Actual current consumption in Central Region – 3 states where B5 Biodiesel available.	112,000
Additional potential Consumption throughout Malaysia inclusive non-subsidized commercial sector if fully implemented (ex Central Region)	388,000
CPO production in 2012	18,785,030
Actual current % of biodiesel used in Central Region in 2012	0.6%
Potential possible % of biodiesel used throughout Malaysia in 2012	2.66%

Source: Malaysian Palm Oil Board (MPOB)

Fuel Use Projections (Liters - `000)									
Calendar Year	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Gasoline Total	23,803,927	24,399,026	25,009,001	25,634,226	26,275,082	26,931,959	27,605,258	28,295,389	29,002,774
Diesel Total	8,329,013	8,537,239	8,750,670	8,969,437	9,193,672	9,423,514	9,659,102	9,900,580	10,148,094
On-road	3,748,056	3,841,757	3,937,801	4,036,246	4,137,153	4,240,581	4,346,596	4,455,261	4,566,642
Agriculture	1,082,772	1,109,841	1,137,587	1,166,027	1,195,177	1,225,057	1,255,683	1,287,075	1,319,252
Construction/mining	416,451	426,862	437,533	448,472	459,684	471,176	482,955	495,029	507,405
Shipping/rail	2,748,574	2,817,289	2,887,721	2,959,914	3,033,912	3,109,760	3,187,504	3,267,191	3,348,871
Industry	333,161	341,490	350,027	358,777	367,747	376,941	386,364	396,023	405,924
Heating	0	0	0	0	0	0	0	0	0
Jet Fuel Total	4,080,494	4,390,612	4,724,298	5,083,345	5,469,679	5,885,375	6,332,664	6,813,946	7,331,805
Total Fuel Markets	36,213,435	37,326,876	38,483,969	39,687,008	40,938,433	42,240,848	43,597,024	45,009,915	46,482,673

The Malaysia Automotive Institute forecasts car ownership to increase at a rate of 5.0 percent from 2013 to 2016 before moderating at 2.5% annually from 2017 till 2020. Better living standards and gradual reduction in car import duties (reduction of 20% to 30% from 2013-2017) will contribute to this growth. The introduction of Euro 4 compliance diesel in 2014 should lead to more diesel vehicles as the new diesel vehicles are purported to be more economical and easier to maintain. Demand for on-road diesel accounts for more than 50 percent of diesel consumed and increased on-road diesel consumption will be the source of most of the expected growth.

For air traffic, the number of registered carrier departures has been steadily increasing. In addition, a new low Cost Carrier Terminal, with 45 million passenger capacity, is set to open in 2014. With that, Malaysia hopes to be an established hub for regional budget airlines. Analysts predict air traffic will grow at 5.8 percent from 2013 to 2025, following growth of 8.8 percent from 2002 till 2012.

III. Ethanol production

Ethanol production is commercially insignificant in Malaysia. While ethanol production from abundant oil palm biomass holds great potential, the process is not yet scientifically feasible nor economically viable.

Ethanol Used as Fuel and Other Industrial Chemicals (Liters - specify unit)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Beginning Stocks	0	0	0	0	0	0	0	0	0
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0
Production	0	0	0	0	0	0	0	0	0
Fuel Production	0	0	0	0	0	0	0	0	0
Imports	0	0	0	0	0	0	0	0	0
Fuel Imports	0	0	0	0	0	0	0	0	0
Exports	0	0	0	0	0	0	0	0	0
Fuel Exports	0	0	0	0	0	0	0	0	0
Consumption	0	0	0	0	0	0	0	0	0
Fuel Consumption	0	0	0	0	0	0	0	0	0
Ending Stocks	0	0	0	0	0	0	0	0	0
Fuel Ending Stocks	0	0	0	0	0	0	0	0	0
Production Capacity									
Number of Refineries	0	0	0	0	0	0	0	0	0
Nameplate Capacity	0	0	0	0	0	0	0	0	0
Capacity Use (%)	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Co-product Production (1,000 MT)									
Co-product A									
Co-product B									
Feedstock Use (1,000 MT)									
Feedstock A									
Feedstock B									

Feedstock C									
Feedstock D									
Market Penetration (Liters - specify unit)									
Fuel Ethanol	0	0	0	0	0	0	0	0	0
Gasoline									
Blend Rate (%)	0	0	0	0	0	0	0	0	0

IV. Biodiesel

***Production*.**

As of December 2012, there were 10 biodiesel plants operating in Malaysia with total capacity of 1.50 million tons. Production in 2012 was 140,983 tons, in which 28,983 tons for export and 112,000 tons went to domestic consumption. Production of biodiesel in 2011 was 18.6% higher at 173,220 tons than in 2012 with export of 49,999 tons. Higher CPO prices and export tariff differentials vis-a-vis Indonesia led to the decline in 2012.

With plans for full availability of B5 in 2013 and 2014, production is forecast to grow, and to continuing growing through 2015 with the introduction of the 10 percent blend. With production capacity still vastly under- utilized and CPO prices the lowest since 4 years, the local industry and GOM is still optimistic regarding the successful implementation B5 and B10 production. Nonetheless, some observers suggest that CPO prices must decline further for production to remain attractive when GOM ends the financial incentives.

Consumption

Malaysia's gasoline and diesel use ratio is about 75 percent and 25 percent, respectively. As the B5 biodiesel mandate was not fully implemented prior to 2013, the average national blend rate has been below 5 percent. As stated above, B5 is supposed to be made available throughout Malaysia by the end of 2013. GOM will then introduce B10 in mid-2014. Biodiesel use is still low, but GOM hopes that with the full implementation of B5, use may approach 500 million liters.

Trade

Biodiesel exports in 2013 have been grown, doubling during the first five months relative to the previous year, but at about 60 million liters, quantities are still limited. Lower CPO prices and adjusted export duties based on prevailing CPO market prices, helped boost exports. The new export duty system has made Malaysia's biodiesel exports more competitive vis-à-vis supplies from Indonesia.

GOM applies no import tariff on biofuels, no import tariff on crude palm oil, but a 5 percent duty is levied on processed palm oil. Similarly, no duties are applied on two common biofuel feedstocks: rapeseed oil and sunflower oil. There is, however, a 5 percent tariff on soybean oil.

Stocks

There are no significant changes in stocks.

Biodiesel (Liters - `000)									
Calendar Year	2006	2007	2008	2009	2010	2011	2012	2013	2014
Beginning Stocks	0	0	0	21,740	16,305	4,348	3,261	2,174	4,348
Production	353,275	434,800	521,760	241,314	86,960	55,437	152,180	379,363	642,417
Imports	122,831	144,571	141,310	0	0	0	0	0	0
Exports	345,666	527,195	630,460	246,749	97,830	54,350	31,523	163,050	184,790
Consumption	130,440	52,176	10,870	0	1,087	2,174	121,744	222,835	456,540
Ending Stocks	0	0	21,740	16,305	4,348	3,261	2,174	4,348	5,435
Production Capacity									
Number of Biorefineries	8	15	23	27	28	28	29	29	29
Nameplate Capacity	530,511	1,121,829	2,019,556	2,610,465	2,746,829	2,746,829	2,746,829	2,746,829	2,746,829
Capacity Use (%)	66.6%	38.8%	25.8%	9.2%	3.2%	2.0%	5.5%	13.8%	23.4%
Feedstock Use (1,000 MT)									
Crude Palm Oil	325	400	480	222	80	51	140	349	591
Market Penetration (Liters - `000)									
Biodiesel, on-road use	130,440	52,176	10,870	0	1,087	2,174	121,744	222,835	456,540
Diesel, on-road use	3,553,550	3,267,550	3,925,350	3,617,900	4,241,900	4,453,995	4,676,695	4,910,529	5,156,056
Blend Rate (%)	3.7%	1.6%	0.3%	0.0%	0.0%	0.0%	2.6%	4.5%	8.9%
Diesel, total use	5,467,000	5,027,000	6,039,000	5,566,000	6,526,000	6,852,300	7,194,915	7,554,661	7,932,394

Table 1:Retail Price of Motor Fuels in Malaysia (per liter)		
	Subsidized Retail Price	Without Subsidies or Sales Tax Exemptions
Gasoline*	US$0.63 (RM1.90)	US$1.09 (RM3.28)
Petroleum Diesel	US$0.60 (RM1.80)	US$1.02 (RM3.08)

*RON95

US$1=RM3.10 (Jun 03, 2013)

Revisions to the PSD Table can be found below. The BTN Trade code 382490900 (other chemical Products) contains other product besides palm oil diesel.

Biodiesel production/consumption/trade (1,000 M Ton)

	2009	2010	2011	2012	2013
Biodiesel					
Beginning stocks	20	15	4	3	2
Production 1/	222	80	51	140	349
Imports	0	0	0	0	0
Total supply	242	95	55	143	351
Exports	227	90	50	29	200
Consumption	0	1	2	112	155
Ending stocks	15	4	3	2	4

Export Trade Matrix

COUNTRY	2011 Quantity (Tons)
European Union	38,811
Taiwan	9,223
South Korea	1,537
Switzerland	221
Singapore **	124
Australia	41
India	40
Japan	3
TOTAL	**49,999**

COUNTRY	2012 Quantity (Tons)
European Union	21,832
Indonesia**	3,960
Taiwan	2,299
China P.R	330
Australia	311
India	188
Singapore**	42

TOTAL	**28,983**

Source: Malaysian Palm Oil Board (MPOB)
**Mainly for re-export

V. Advanced Biofuels

Currently MPOB is working on pilot project to develop 2nd generation of biodiesel by converting biomass to liquid fuel via fast pyrolysis process. The use of biomass such as empty fruit bunches as feedstock are viewed as an alternative to CPO.

VI. Biomass for Heat and Power

Wood Pellets (1,000 MT)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Beginning Stocks	0	0	0	0	0	0	0	0	0
Production									
Imports									
Exports									
Consumption									
Ending Stocks									
Production Capacity									
Number of Plants									
Nameplate Capacity									
Capacity Use (%)	0	0	0	0	0	0	0	0	0

Biogas (MW)						
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Biogas Landfill / Sewage	93.00	14.00	16.00	9.00	36.00	N/A
Biomass Field Crops/Manure	372.00	421.00	447.00	446.00	454.00	N/A
Total	465.00	435.00	463.00	455.00	490.00	0.00

Data from Energy Commission Malaysia - www.st.gov.my (2006-2010). Data for 2011 is not available.

Biogas (MWh)			
Calendar Year	**2012**	**2013**	**2014**
Biogas Landfill / Sewage	2,896.83	2,988.80	0.00
Biomass Field Crops/Manure	99,533.87	92,467.06	0.00
Total	102,430.70	95,455.86	0.00

Data from Sustainable Energy Development Agency Malaysia - www.seda.gov.my (2012-2013)

The use of biomass and biogas to generate electricity in Malaysia is very insignificant. Most of biomass and biogas plants are from Palm sector and as the mills are remotely located, and high investment cost in connecting transmission lines from plants to the national grid make it difficult. Most of electricity produced are use to run the mills or for community surrounding the area.